Claims

What is claimed is:

1.   In a networked environment containing multiple interconnected nodes, a method for identifying a shortest protectable path between two network elements, said method comprising:

10   a)   determining a set of multiple shortest paths between the two network elements; and

b)   determining which members of the set of multiple shortest paths are protectable.

15   2.   The method in claim 1, wherein each of said steps is performed before a search is made for alternate edge disjoint paths.

3.   The method in claim 1, wherein each network element to 20   which there is more than one shortest path is marked.

4.   The method in claim 3, wherein said determining which members of the set of multiple shortest paths is protectable is accomplished by examining the parent node of each of the members 25   of the set of multiple shortest paths, and selecting those

members of the set of multiple shortest paths for which the

parent node is not marked.

5. A method of identifying and selecting a shortest path

5 between two network elements such that said shortest path has an

alternate edge disjoint path between the two network elements,

said method comprising:

(a) determining a set of multiple shortest paths

between a source network element and a set of destination network

10 elements;

(b) marking each member of the set of destination

network elements for which there are two or more shortest paths

to; and

(c) identifying and selecting a shortest path to a

15 particular destination network element having an edge disjoint

alternate path, wherein the shortest path is selected as the path

for which the destination element is not marked.

6. The method in claim 5, wherein each of said steps is

20 performed before a search is made for alternate edge disjoint

paths.

7. The method in claim 5, wherein said identifying and

selecting the shortest path to a particular destination network

25 element is accomplished during and as a part of the generation of

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a shortest path tree, and before a search is made for an edge disjoint path.

8. In a networked environment containing multiple
5 interconnected nodes, a method of supporting the routing and
provisioning of circuits, the method comprising:

(a) determining a set of multiple shortest paths
between two network elements;

(b) identifying and selecting as the shortest path
10 between said two network elements, a shortest path which is
protectable; and

(c) identifying at least one alternate edge disjoint
path for each of said selected shortest paths.

15 9. The method of claim 8, wherein said determining a set
of multiple shortest paths and said identifying and selecting as
the shortest path between said two network elements are performed
before a search is made for alternate edge disjoint paths.

20 10. The method of claim 9, further comprising marking each
network element to which there is more than one shortest path,
wherein said identifying and selecting as the shortest path is
accomplished by examining the parent node of each member of the
set of multiple shortest paths and selecting a shortest path for
25 which the parent node is not marked.

11.   A computer program embodied on a computer readable medium for establishing a protected route, said computer program comprising:

5   (a)   a code segment for determining a set of multiple shortest paths between two network elements; and

(b)   a code segment for determining which members of the set of multiple shortest paths is able to be path protected.

10   12.   The computer program of claim 11, wherein said code segment for determining a set of multiple shortest paths marks each node to which there is more than one shortest path.

13.   The computer program of claim 11, wherein said code
15   segment for determining which members of the set of multiple shortest paths is able to be path protected is accomplished by examining a parent node in each of the shortest paths, and selecting a shortest path for which the parent node is not marked.

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14.   The computer program of claim 11, wherein said code segment for determining which members of the set of multiple shortest paths is a part of said code segment for determining a set of multiple shortest paths so the determination of which

members of the set are protectable is accomplished while the

determination of the set is accomplished.

15.   The computer program of claim 11 further comprising:

5   (c) a code segment for identifying at least one alternate

edge disjoint path for at least one of the set of multiple

shortest paths which is able to be path protected.

16.   The computer program of claim 15, wherein said code

10   segment for determining which members of the set of multiple

shortest paths is activated prior to said code segment for

identifying at least one alternate edge disjoint path.